HR-216 Asphalt Emulsion Bound Macadam

Key Words: Macadam, base, asphalt emulsions, road

ABSTRACT

Recent macadam stone base research projects have provided excellent drainage characteristics but have an apparent lack of stability. Even when the base is properly rolled and keyed together, the large stones are easily displaced. The use of an asphalt emulsion binder may increase stability while still providing a relatively low cost roadway base.

Objectives
1. Identify a cost effective asphalt emulsion bound macadam typical cross section.
2. Determine the effectiveness of engineering fabric placed under macadam roadbeds.
3. Evaluate the use of emulsions in surface seal coats.

Conclusions
1. The minus #200 sieve material for the macadam stone should be held to a minimum. For the emulsion used on this project, the minus #200 material had to be less than four percent to achieve satisfactory coating of the macadam stone.
2. The placement of the emulsion treated macadam required no additional equipment or time than for plain macadam placement.
3. Emulsion treating the macadam stone for the shoulder base appears unnecessary.
4. The emulsion treated macadam base beneath an asphaltic concrete wearing surface yielded a higher structural rating than the plain macadam beneath a comparable asphaltic concrete surface.
5. The performance of the fabric between the subgrade and the macadam base to prevent soil intrusion into the base could not be determined by the non-destructive testing conducted.
6. When no choke stone is used over the macadam base, allowance for AC mix overrun should be made.
7. Use of an emulsion instead of a cutback asphalt saved money and energy. However, the poor performance of the seal coat negated any real savings.